

CLAIMS

1. A wheel conveyor comprising a frame material having a substantially groove-like sectional shape which includes an opening in an upper surface portion thereof and
5 a wheel assembly inserted and installed in a groove of said frame material, said wheel conveyor being constructed of a plurality of wheels that are rotatably supported by said wheel assembly and have outer circumferential surfaces protruding a little above an opening surface, wherein:
10 a wheel has an axle pin caused to pierce a central portion of a boss thereof to project from both ends, pin holes into which projecting ends of said axle pin are inserted are formed in support plates arranged on both sides of said wheel, and said wheel assembly is constructed
15 by inserting said projecting ends of said axle pin into said pin holes of said support plates to be rotatably supported; wherein:
a cross-sectional shape of said frame material is formed such that a first groove-like portion facing inward,
20 which is formed integrally with an inward lip portion forming an opening of an upper surface portion, has substantially the same shape and size as a cross-sectional shape of said support plate and supports said support plate to be movable in a longitudinal direction, an inward bottom
25 groove-like portion formed integrally with a bottom wall is formed to splay more than an edge of said lip portion, and inner ends of said two groove-like portions are integrally jointed to each other through a joint portion, and the cross-sectional shape of said support plate as a whole is
30 formed in a substantially groove-like shape which includes an opening in an upper surface portion and formed into a uniform cross section in a longitudinal direction; and wherein:

said support plates of a plurality of said wheel assemblies are inserted along a first groove-like portions of said frame material, and a plurality of said wheels are arranged in line.

5

2. The wheel conveyor according to claim 1, wherein each of said wheels has an axle portion caused to project from both ends of said central portion of said boss, said wheel assembly is constructed by inserting said axle
10 portion into said pin holes of said support plates to be rotatably supported, and said support plates of said wheel assembly are inserted along said first groove-like portions of the frame material to construct said wheel conveyor.

15 3. The wheel conveyor according to either one of claims 1 or 2, wherein one or more kinds of said wheel assemblies, which include a different number of wheels, that is, one, two, three or more wheels, constructing each of said wheel assemblies and have different natural
20 frequencies, are fitted together, and said support plates of said wheel assembly are inserted along said first groove-like portions of said frame material.

4. The wheel conveyor according to any one of claims
25 1 through 3, wherein said pin holes of said support plates constructing said wheel assembly are formed such that small diameter holes are pierced integrally with hole portions into which axle pins or axle portions are inserted, and tip ends of said axle pins or of said axle portions are
30 inserted no further than step portions between said respective hole portions and said respective small diameter holes and are out of contact with said frame material.

5. The wheel conveyor according to any one of claims 1 through 4, wherein lower groove walls of said first groove-like portions in said frame material are formed into outward declining faces, and lower end faces of said support plates in said wheel assembly are formed into similar outward declining faces.

6. The wheel conveyor according to any one of claims 1 through 5, wherein any one of recessed portions, protruding portions, and hole portions are formed in any one of said lip portions, longitudinal groove walls, and lower groove walls, which form the first groove-like portions of said frame material, said support plates are provided with either one of protruding portions or recessed portions interfitted with any one of said recessed portions, said protruding portions or said hole portions, and said wheel assembly is positioned by interfitting either one of said protruding portions or said recessed portions of said support plates with any one of said recessed portions, said protruding portions or said hole portions formed in said first groove-like portions of said frame material; and wherein:

the wheel assembly in which said support plates are inserted in said first groove-like portions said frame material is set in a desired position by interfitting said protruding portions and said recessed portions of said support plates with any one of said recessed portions, said protruding portions or said hole portions of said first groove-like portions, thereby performing adjustment and control of a vibration cycle as said wheel conveyor.

7. The wheel conveyor according to any one of claims 1 through 6, wherein either one of recessed narrow portions

and protruding narrow portions are formed in either or both of said bottom groove-like portions and said joint portions of said frame material, thereby performing adjustment and control of said vibration cycle as said wheel conveyor.

5

8. The wheel conveyor according to any one of claims 1 through 7, wherein said support plates of said wheel assembly are made of a plastic material having an elastic modulus that is low to such a degree that a damping
10 function is retained.

9. The wheel conveyor according to any one of claims 1 through 8, wherein each of said support plates of said wheel assembly includes in a lower portion thereof either
15 one of an elastic body or a plastic component part having a damping function.

10. The wheel conveyor according to any one of claims 1 through 7, wherein component parts of said wheel include
20 a material portion having an elastic modulus that is low to such a degree that a damping function is retained.

11. The wheel conveyor according to any one of claims 1 through 10, wherein said wheel assembly includes said
25 wheels and said support plates made of a plastic material possessing either one of electric conductivity or an antistatic property.

12. The wheel conveyor according to any one of claims
30 1 through 11, wherein a dust-trapping sheet that has a width spanning an inside of the right and left bottom groove-like portions is laid on said bottom wall surface of said frame material.